



**LOUDOUN COUNTY, VA
TECHNICAL REVIEW**

**PROPOSED
NEW
150-FOOT MONOPOLE
By
COMMUNITY WIRELESS STRUCTURES
(CWS)**

CWS SITE # 102 - Taylorstown

CMPT 2007-0005

SPEX 2007-0012

Submitted by:

ATLANTIC TECHNOLOGY CONSULTANTS, INC.

A Member of The Atlantic Group of Companies

ATC PROJECT #: 1025-17

November 2, 2007



THE ATLANTIC GROUP
OF COMPANIES INC.

EXECUTIVE SUMMARY:

Community Wireless Structures IV, LLC ("CWS") of Falls Church, Virginia, has submitted an application to Loudoun County requesting a Special Exception and Commission Permit to construct 150-foot monopole on property owned by James E. and Betty Jo Barker located north of Leesburg on the west side of James Monroe Highway (Route 15) approximately ¼ mile south of Taylorstown Road (Route 663) at 13514 Springhollow Lane, Leesburg, Virginia.

CWS is a tower developer for wireless infrastructure and offers co-location opportunities for eligible wireless carriers such as cellular, PCS, paging, and backhaul providers. CWS has submitted a letter of interest from T-Mobile, Fibertower Corporation ("Fibertower"), and Mobile Satellite Ventures ("MSV"). T-Mobile is a FCC licensed telecommunications provider authorized and mandated to provide wireless communications services to the Loudoun County area. Fibertower is a wireless backhaul provider currently doing a network design in Loudoun County. MSV is currently designing a network for the Washington DC market in preparation for offering a new wireless service. The Applicant is proposing the construction of a new 150-foot monopole to support service delivery in an area of verifiable lack of coverage in and surrounding the area of Taylorstown.

This report outlines the specific areas of evaluation with respect to this proposal, and this consultant's recommendations regarding the Application package as presented. Supporting and clarifying evidence regarding the suitability of the proposed design in meeting the specified coverage goals is also included.

In general, it is the opinion of this consultant that this application height can be reduced to 110' AGL vs. the proposed 150' AGL and still accomplishes all the co-location potential and coverage goals. This application should be considered for approval contingent upon the criteria noted in Section 3.0 "Recommendations" of this document.

George N. Condyles IV

George N. Condyles, IV
President and COO
Atlantic Technology Consultants, Inc.

1.0 TECHNICAL:

1.1 Siting

The proposed tower site is a 60' x 80' fenced compound on an approximately 4,800 square foot portion of a 15.3 acre parent parcel. The property is zoned AR-1 (Agricultural Rural-1) and located on Tax Map 19 ((14)) (MCPI# 219-36-9624). The proposed site can be accessed from Springhollow Lane approximately one quarter mile south of Taylorstown Road and is physically located at coordinates N 39° 14' 39.84" and W 77° 34' 4.38" at a ground elevation of 510.709-feet. The proposed 12-foot wide access driveway will traverse an adjacent 4.01 acre property, also owned by James E. and Betty Jo Barker, that can be located on Tax Map 19 ((14B)) (MCPI# 219-27-3881).

The Applicant is proposing to construct one (1) 150-foot monopole with a 6' lightning rod, which can accommodate up to six (6) co-locators. The site compound could accommodate approximately 6 shelters or cabinets.

Setback:

The tower complies with the County's current setback requirement that "...towers shall be set back one (1) foot for every five (5) feet in height from the property line." [Loudoun County 1993 Zoning Ordinance, Section 5-618 (C) (3) (e)]. In other words, it is a 20% setback requirement. The Site Plan submitted with this Application shows the proposed 150-foot monopole setback from the nearest property line is approximately 90-feet, which is 60% of the height of the tower.

The nearest occupied dwelling to the monopole is approximately 600±', which is a 400% setback.

This tower should be adjusted to a 750' setback from a residence.

Geotechnical:

No special requirements noted.

Landscape Buffer:

The proposed tower site is located deep in the south central portion of the property; however it may be visible from residences located on the ridge line of Catoctin Mountain. The houses are located approximately at a latitude and longitude of N 39° 14' 37.7" and W 77° 33' 42.7". From Goodhart Lane the tower may be visible to 2-4 residences.

According to the County Staff Report for the Planning Commission Public Hearing dated September 17, 2007 on page 7, page 13:

“Although staff supports the buffering of the tower base and the fence enclosure, these measures will generally not mitigate the visual impact of the top half of the tower from the adjacent parcels. Planting a row of trees along the northern portion of Springhollow Drive near the neighboring properties would help filter the view of the tower and mitigate its visual impact on the neighboring parcels.”

Co-Location:

While co-location is preferable to construction of a new site, with such co-location minimizing visual impact of telecommunications equipment on the surrounding area, there are currently no existing structures within a 2-mile radius on which to co-locate.

CWS has designed the proposed monopole to accommodate up to six (6) co-locations. As previously mentioned, they have submitted Letters of Interest from T-Mobile, Fibertower, and MSV.

1.2 Structural

The proposed 150-foot monopole-style tower design shall consist of high strength steel and shall be in full compliance of the EIA/TIA-222-F guidelines (the accepted industry standard) for structures, which is mandated to withstand the structural loading of all appurtenances, plus additional wind and ice loading.

Structural drawings of the monopole signed/sealed by a Professional Engineer licensed in the Commonwealth of Virginia demonstrating the tower's ability to structurally accommodate the antennae and associated appurtenances of six (6) co-locations, while complying with all applicable construction and loading standards, guidelines, and codes has NOT been submitted with the Application.

Furthermore, in conformance with County ordinance, work at this site will remain in compliance with ALL federal, state, and local building codes and regulations if work proceeds as outlined in the application.

1.3 RF Exposure

FCC bulletin OET-65 provides guidance for a licensee proposing to construct a telecommunications support structure in calculation of RF exposure limitations, including analysis of the cumulative effect of all transmitters on the structure.

Appropriate steps, including warning signage at the site, must be taken to protect both the general public and site workers from unsafe RF exposure in accordance with federal guidelines.

Documentation of an RF exposure study is NOT included with this application; therefore it is assumed that this study has not been performed. Although this Consultant sees no evidence of unsafe RF exposure levels being generated at this site if co-location were to proceed as proposed, a certified RF Analysis Report is recommended

RF site exposure warning signage placement shall be appropriately planned for this site.

1.4 Grounding

Grounding of all structures and equipment at an RF site is critically important to the safety of both personnel and equipment at the site. Even a single component not meeting this standard places all other site components at risk for substantial damage. All structures and equipment at the site should maintain a ground potential difference of less than 5 ohms.

A grounding plan was not submitted with this Application.

1.5 General Safety

The 60'x 80' site compound will be surrounded by a suitable seven (7) foot security fence with one (1) foot of barbed wire to prevent unauthorized access to the tower.

Additional safety measures to be placed at this site include RF exposure warning signage, site identification information, and routine and emergency contact information and FCC Registration number.

The Permit Plans should include the installation of an OSHA-approved style of fall prevention cable.

1.6 Interference

Interference study, taking into accounts all proximally located transmitters and receivers known to be active in the area, is advisable prior to any new tower construction. A full interference study has not been included with the Applicant's design. Therefore, it is assumed that such a study has not been performed.

While it remains technically prudent and advisable to complete this study for any new tower construction, practically speaking this consultant sees no evidence of interference by or with this site after a general evaluation of the surrounding transmitter sites.

Should any interference issues be posed with respect to this site, mitigation would nevertheless remain the responsibility of the tower owner and affected carrier(s), and would be regulated by the Federal Communication Commission, having no effect or burden on the County.

2.0 PROCEDURAL

2.1 FAA Study

An initial search was performed by this consultant via TOWAIR Determination under the ASR online system on the FCC website to determine if registration is required. The TOWAIR determination results were as follows:

“Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.”

2.2 FCC Antenna Site Registration

This site does not yet have, nor is it required to have, an antenna site registration number. For both routine and emergency identification purposes, however, it is recommended that this site be registered with the Federal Communication Commission. All registered sites should have their registration number conspicuously displayed at the site which is normally on the security fence surrounding the compound area.

2.3 Environmental Impacts

The National Environmental Policy Act of 1969 (NEPA), delineated in Title 47 of the Code of Federal Regulations, Part 1, Subpart I, sections 1.1301-1.1319, requires federal agencies to incorporate environmental considerations into their decision-making process when evaluating new construction proposals. As a licensing agency, the Federal Communication Commission (FCC) requires all licensees to consider the potential environmental effects from their construction of antenna support structures, and to disclose those effects in an Environmental Assessment (EA) that must be filed with the FCC for review.

A NEPA Phase I Evaluation, dated April 9, 2007 and prepared by Baxter Consultants, Inc. have been submitted with the Application and indicate NO IMPACT.

However, it is important to note the following responses:

According to the response from the Department of Game and Inland Fisheries dated January 10, 2007, “This project is adjacent to a tributary to a portion of Catoctin Creek that is designated a Threatened and Endangered species’ Water. This designation is due to documented occurrences of the state threatened wood turtle (*glyptemys insculpta*). Therefore, the applicant should coordinate with the VDGIF Environmental Services Section (804-367-693) concerning potential impacts to this resource.

According to the VDGIF Environmental Services Section response dated January 29, 2007, “Based on the scope and location of this project site, we do not anticipate significant adverse impacts upon waters known to support ST wood turtle. However, due to the proximity of this project site to such waters, we recommend that all contractors associated with work at this site be made aware of the possibility of wood turtles on site and become familiar with their appearance, status and life history. If any wood turtles are encountered and are in jeopardy during the development or construction of this project, immediately remove them from danger and move them safely to suitable habitat in or near the closest perennial stream.”

A NEPA Phase I Report should include the following items:

- **NEPA Checklist**
- **NEPA Summary Report**
- **Associated documentation**
 - **Figures, Drawings, Maps**
 - **Tribal Correspondence**
 - **Land Resources Map and FEMA Floodplain Map**
 - **SHPO Correspondence (See next Section 2.4 “Historic Impacts)**
 - **Department of Game and Inland Fisheries Response**
 - **Department of Conservation and Recreation Response**

The NEPA Phase I Assessment is a report that is submitted to the FCC only if requested by the FCC. Otherwise, it shall be reviewed by the appropriate locality for which the proposed tower site is being considered for approval.

2.4 Historic Impacts

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that State Historic Preservation Offices (SHPO) and the President's Advisory Council on Historic Preservation be given a reasonable opportunity to comment on all undertakings with the potential to affect historic properties. The licensee is required to submit to the SHPO a detailed description of the project, a listing of local historic resources, and a discussion of any measures being undertaken to mitigate impacts (if any) on historic resources. Upon receipt, the SHPO has thirty (30) days to review and respond to those submissions. All agencies with authority to permit construction are required to consider the SHPO response in its decision making process with respect to new construction applications.

A response from the Department of Historic Resources (VDHR) dated February 1, 2007 was submitted with the Application and states the following:

"This project will have an effect on historic resources. Based on the information provided, the effect will not be adverse."

2.5 Supporting Documentation

CWS did include T-Mobile coverage maps supporting the co-location of their antennas on CWS' proposed 150-foot monopole.

An independent RF analysis has been performed by this consultant with coverage maps appended to this report at the following heights:

150-foot	Propagation map – Blue
130-foot	Propagation map – Yellow
110-foot	Propagation map – Orange
90-foot	Propagation map – Pink
70-foot	Propagation map – Grey

The following analysis is noted:

150-foot	to	130-foot	0% difference in coverage
150-foot	to	110-foot	5% difference in coverage
150-foot	to	90-foot	10% difference in coverage
150-foot	to	70-foot	15% difference in coverage

It is this Consultant's opinion that the applicant will be able to meet their stated coverage objectives at a height of 110-foot.

Supporting documentation in the form of photo-simulation was submitted with the Application.

3.0 RECOMMENDATIONS

This application represents an appreciable intent on the part of the Applicant to conform to all applicable federal, state, and local regulations, accepted industry practices, and specific County ordinances regarding construction of new telecommunications towers. It is therefore the recommendation of this Consultant that the County consider the Applicant's proposal contingent upon the following criteria being submitted for review prior to final approval:

- Slight adjustment to achieve 750' setback from house.
- Structural drawings of the tower;
- Grounding specifications
- Certified RF Analysis report;

As mentioned in the previous section of this document, it is this Consultant's opinion that the applicant will be able to meet their stated coverage objectives at a height of 110-foot.

In closing, this consultant remains available to address any comments or questions which may arise after review of this report. Any interested party with such comments or questions may feel free to contact this firm, which remains committed to delivering independent, objective, unbiased, and thorough consulting services.

Respectfully submitted,

A handwritten signature in cursive script that reads "George N. Condyles IV".

George N. Condyles, IV, CPM
President & COO



Taylorstown Road



Scenic By-Way



Approximate Location of Tower Compound looking West



East View of Ridge line Above Tower Compound



West View



Taylorsville Church

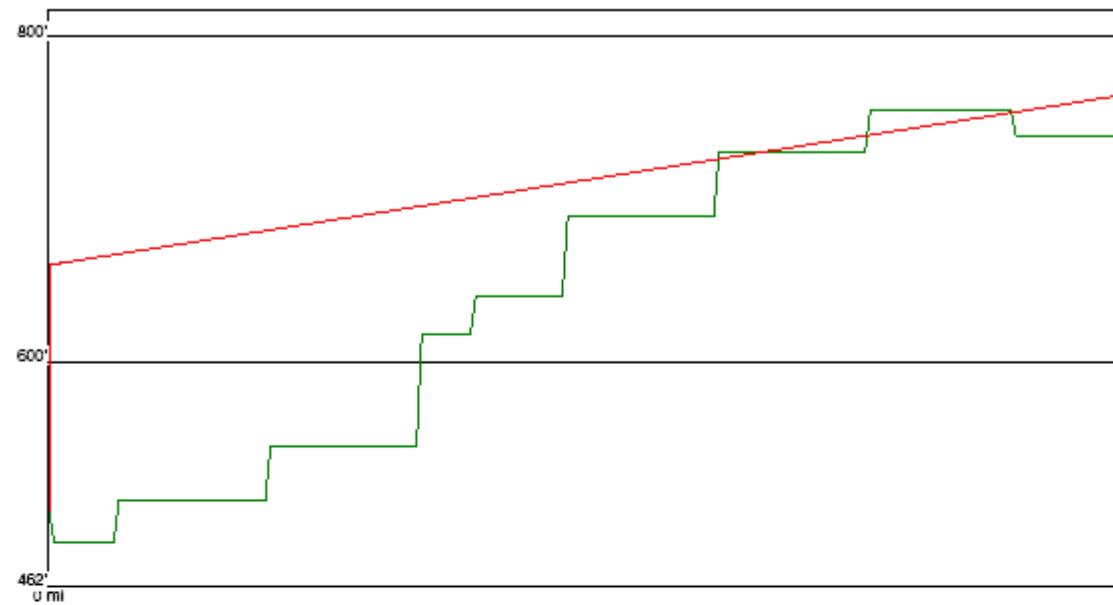


Road Above Proposed Tower on Ridge Above



Home without View of Tower during foliage season

ComStudy 2 Path Profile



CWS-150

Lat: 39-14-39.9 N
 Lon: 77-34-04.3 W
 AMSL: 510 ft
 Tower AGL: 151 ft

RESIDENTIAL

Lat: 39-14-37.7 N
 Lon: 77-33-43.0 W
 AMSL: 758 ft
 Tower AGL: 7 ft

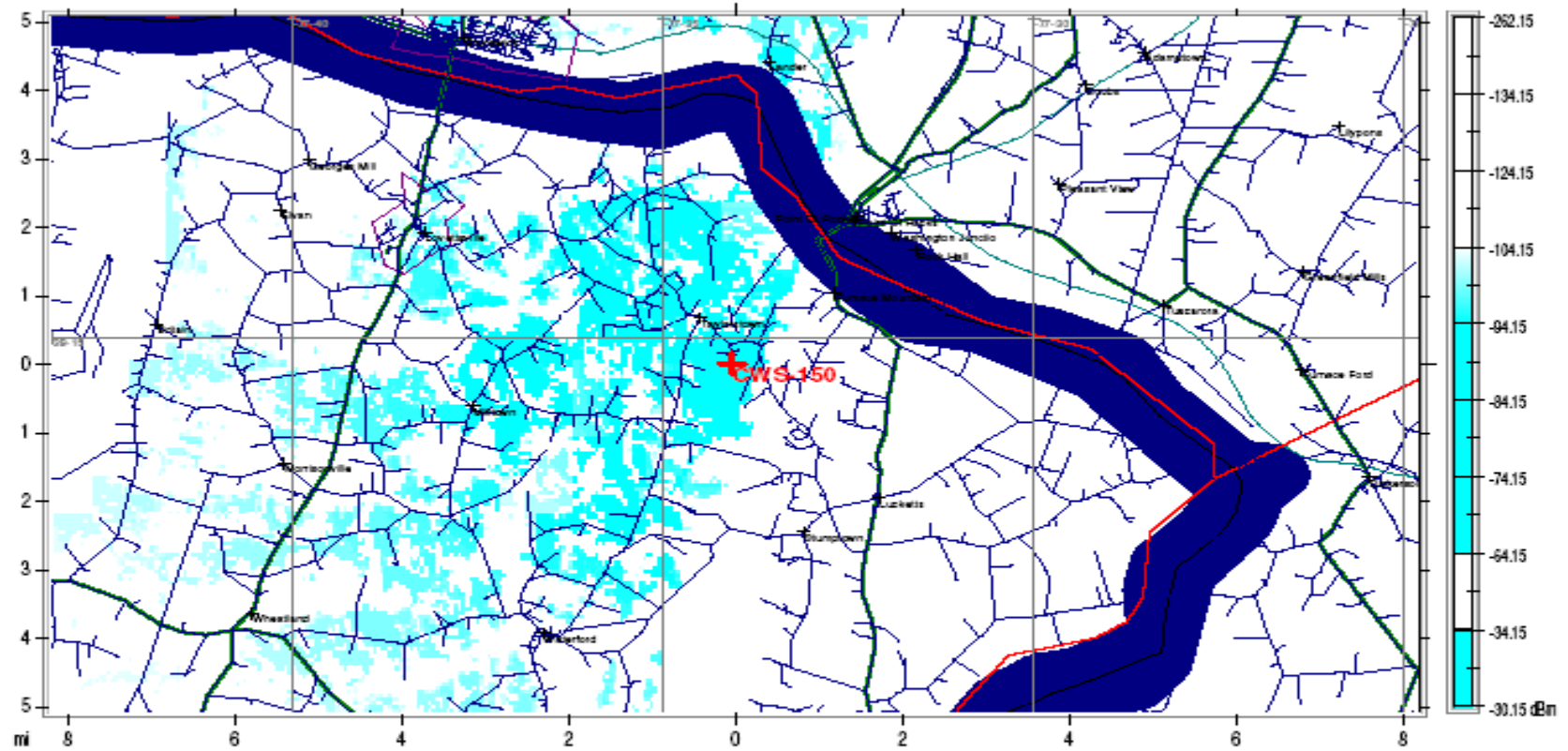
Profile Info

Distance: 0.32 mi
 Bearing: 97.26 deg
 # of points: 200
 K value: 1.333
 Frequency: 1920.0000
 Clearance: 0.6

Losses

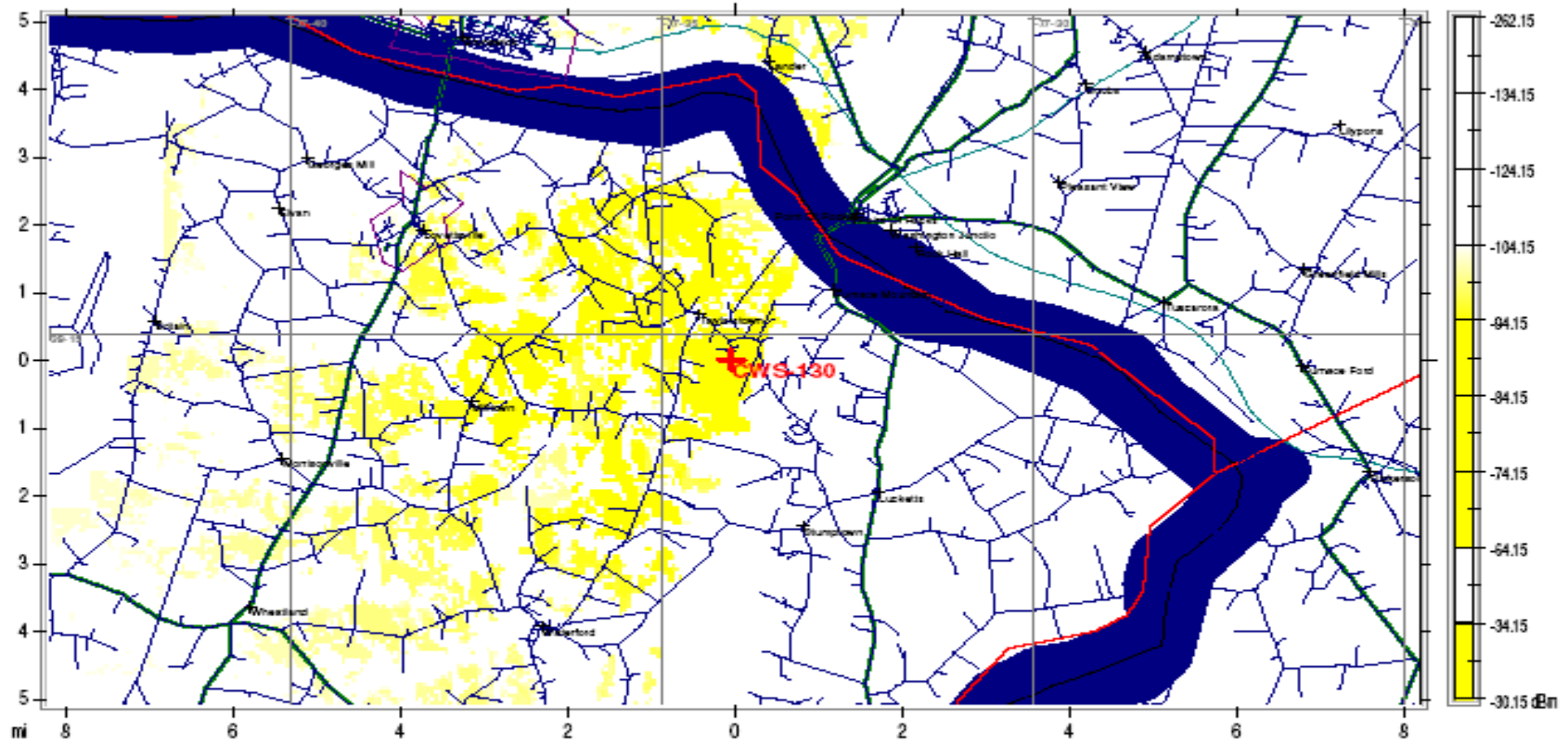
Base Loss: 67.9 dB
 Fade Margin: N/A
 Diffraction: 6.0 dB
 Fresnel: 7.7 dB

TAYLORSTOWN, LOUDON COUNTY, VIRGINIA



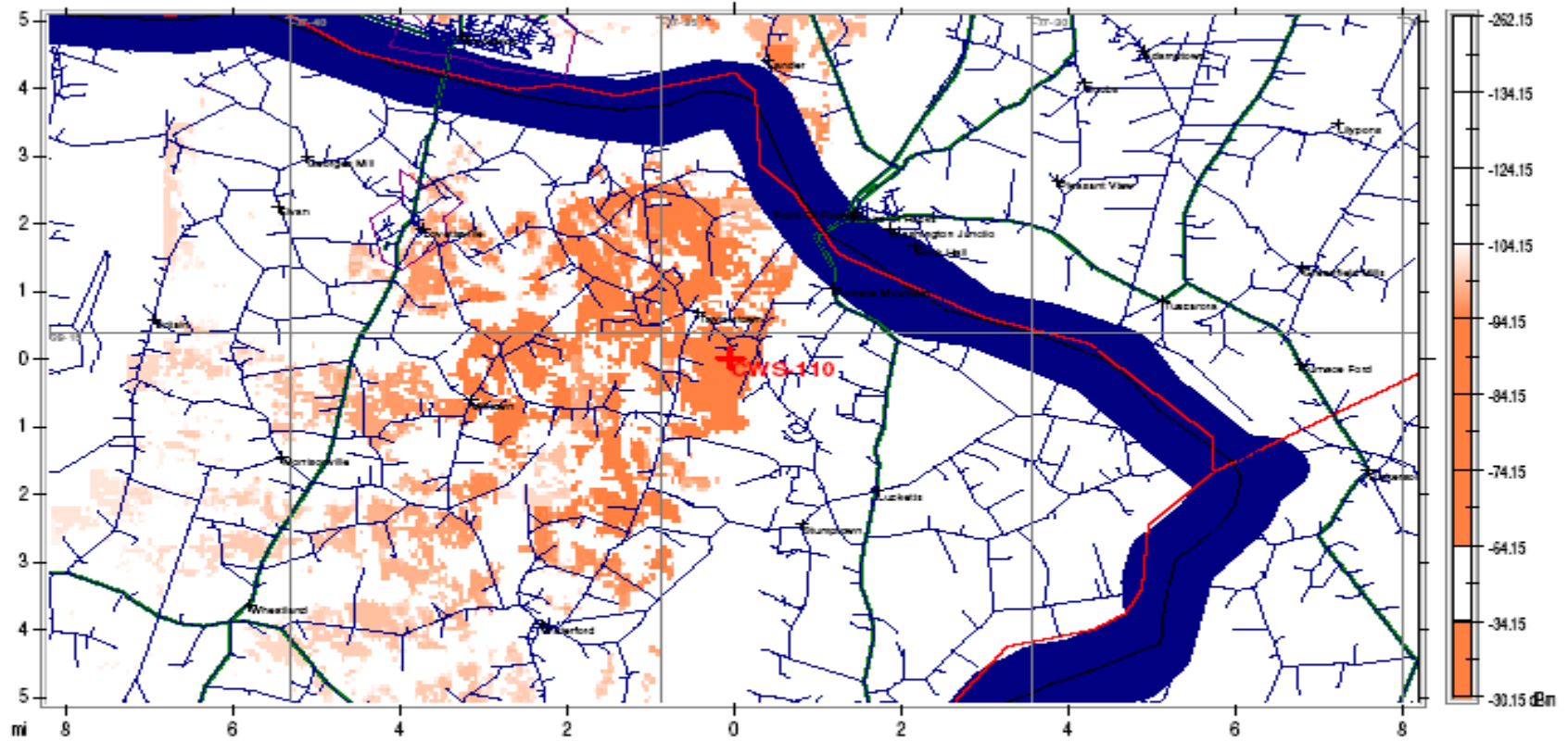
CWS-150 AGL. TOWER

TAYLORSTOWN, LOUDON COUNTY, VIRGINIA



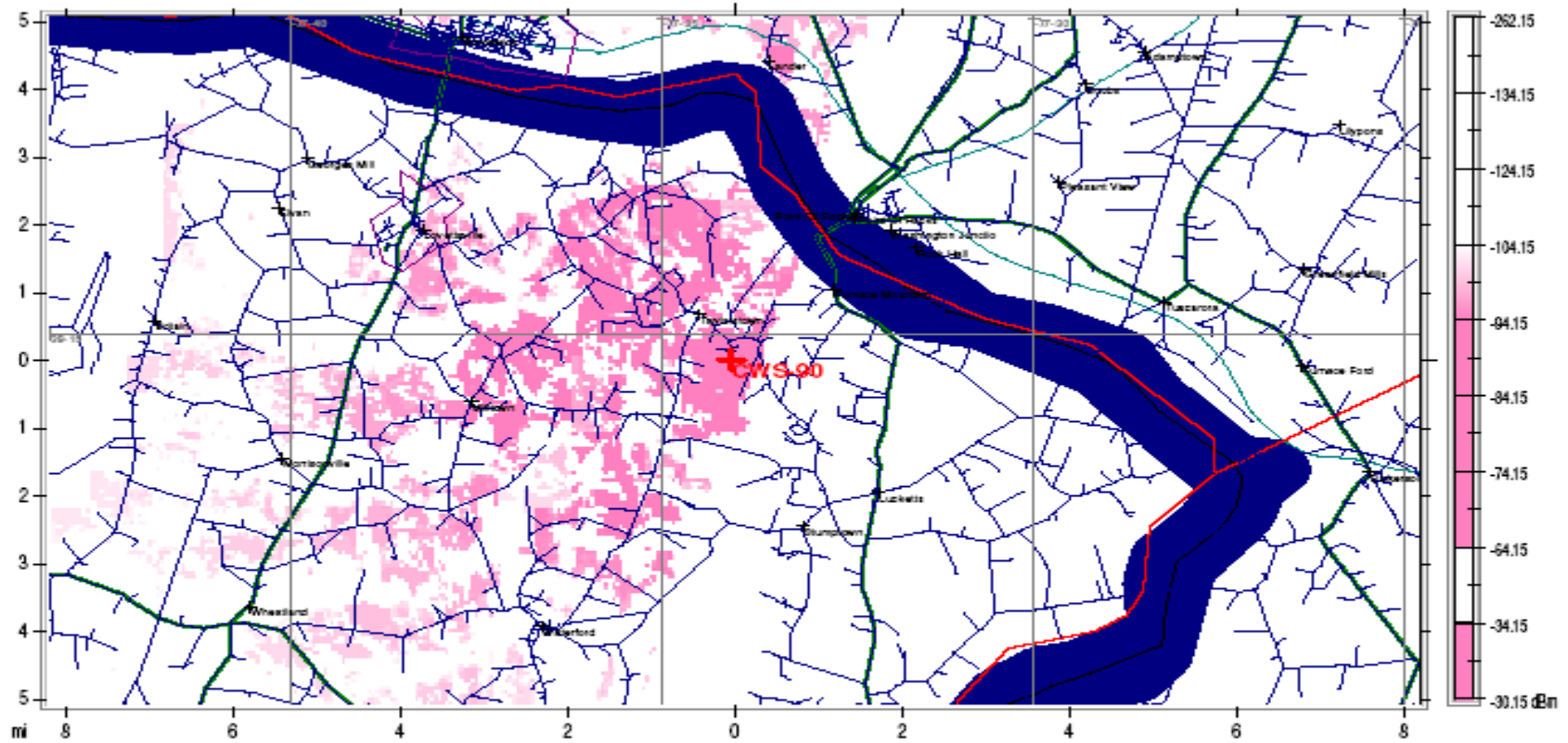
CWS-130 AGL. TOWER

TAYLORSTOWN, LOUDON COUNTY, VIRGINIA



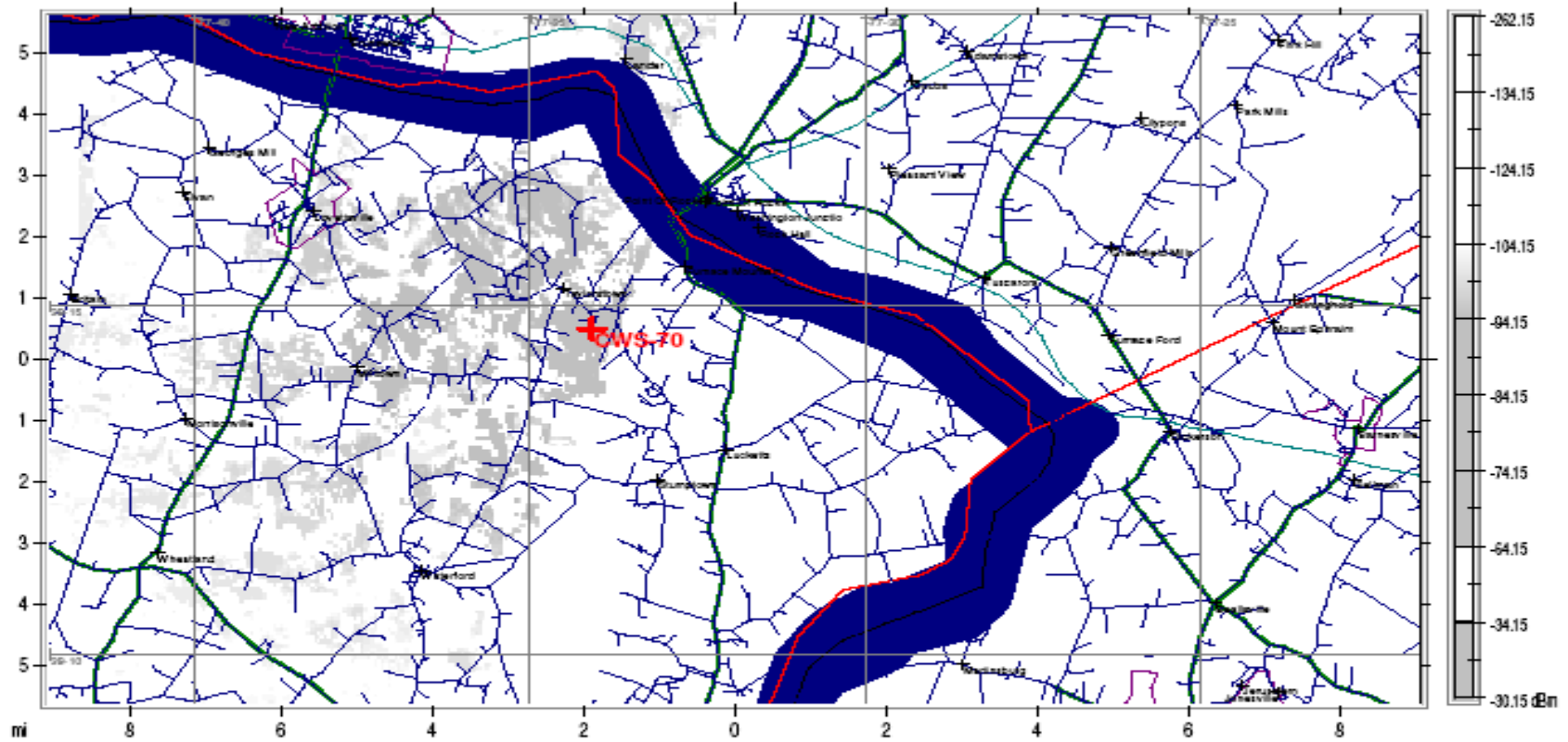
CWS-110 AGL TOWER

TAYLORSTOWN, LOUDON COUNTY, VIRGINIA



CWS-90 AGL. TOWER

TAYLORSTOWN, LOUDON COUNTY, VIRGINIA



CWS-70' AGL. TOWER



Antenna Structure Registration

[FCC](#) > [WTB](#) > [ASR](#) > [Online Systems](#) > TOWAIR[FCC Site Map](#)

TOWAIR Determination Results

[? HELP](#)[New Search](#) [Printable Page](#)

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates

Latitude	39-14-39.8 north
Longitude	077-34-04.4 west

Measurements (Meters)

Overall Structure Height (AGL)	47.5
Support Structure Height (AGL)	45.7
Site Elevation (AMSL)	155.7

Structure Type

TOWER - Free standing or Guyed Structure used for Communications Purposes

Tower Construction Notification

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

Note: Notification does NOT replace [Section 106 Consultation](#).

ASR Help	ASR License Glossary - FAQ - Online Help - Documentation - Technical Support
ASR Online Systems	TOWAIR - CORES - ASR Online Filing - Application Search - Registration Search
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